

1. A method for facilitating mass customization of an object, comprising:
generating a template representing data common to the object;
generating specific data to customize the object in conjunction with the template;
and

5 fabricating a customized version of the object.

2. The method of claim 1, further comprising generating a tool-path to
customize the object.

10 3. The method of 1, wherein the target path is represented as a spline.

4. The method of claim 1, wherein the object has an ideal model surface,
further comprising creating an idealized tool-path from the ideal model surface.

15 5. The method of claim 1, further comprising generating a mathematically
smooth 3D spline using the idealized toolpath.

6. The method of claim 1, further comprising generating surface normals
from the ideal model surface at points distributed around the idealized toolpath.

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7. The method of claim 1, further comprising displacing each surface normal
from its end to the nearest point on the smooth 3D spline.

8. The method of claim 1, further comprising creating a spline connecting
25 each unattached end of each surface normal.

9. The method of claim 8, wherein the ends are attached sequentially in a
loop. ✓

10. The method of claim 1, further comprising using a source spline to define motion of the tool head by defining tool orientation vectors, and subsequent motion of a tool head.

5 11. The method of claim 1, further comprising adjusting the source spline.

12. The method of claim 11, wherein the source spline is adjusted by moderate elevation or lowering of the angle of the surface normal.

10 13. A method for fabricating an object, comprising:
receiving a digital representation of a target path;
generating a mathematically smoothed version of the target path;
applying the smoothed target path to generate a secondary target path; and
generating a streamlined tool-path to fabricate the object.

15 14. The method of 13, wherein the target path is represented as a spline.

15 15. The method of claim 13, wherein the object has an ideal model surface, further comprising creating an idealized toolpath from the ideal model surface.

20 16. The method of claim 13, further comprising generating a mathematically smooth 3D spline using the idealized toolpath.

25 17. The method of claim 13, wherein the object has an ideal model surface, further comprising generating surface normals from the ideal model surface at points distributed around the idealized toolpath.

30 18. The method of claim 13, further comprising displacing each surface normal from its end to the nearest point on the smooth 3D spline.

19. The method of claim 13, further comprising creating a spline that connects each unattached end of each surface normal and wherein the ends are attached sequentially in a loop.

5 20. The method of claim 13, further comprising using a source spline to define motion of the tool head by defining tool orientation vectors, and subsequent motion of a tool head.

21. The method of claim 13, further comprising adjusting the source spline by
10 moderate elevation or lowering of the angle of the surface normal.

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